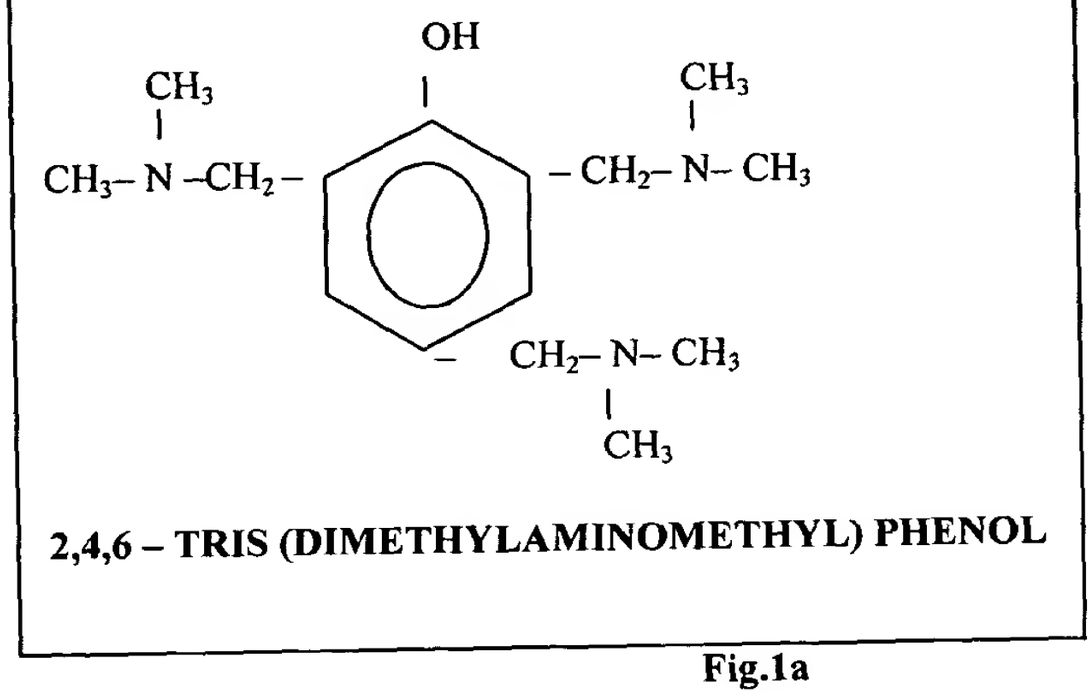
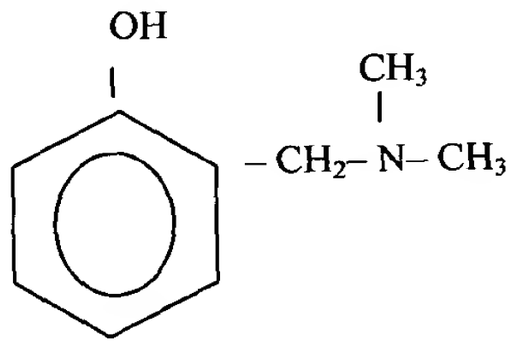


2,4,6 – TRIS (DIMETHYLAMINOMETHYL) PHENOL

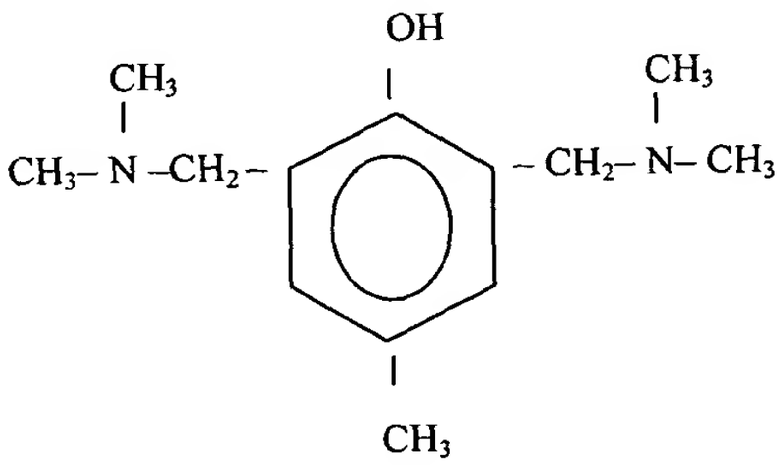
Fig.1a



2 – (DIMETHYLAMINOMETHYL) PHENOL

$HO\text{-}C_6H_4\text{-}CH_2N(CH_3)_2$

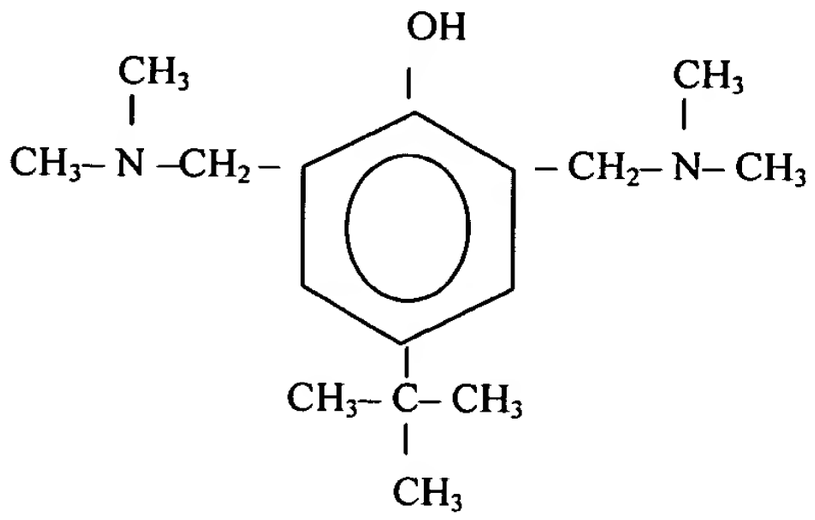
Fig.1b



2,6 – BIS (DIMETHYLAMINOMETHYL) CRESOL

$HO\text{-}CH_3\text{-}C_6H_2[CH_2N(CH_3)_2]_2$

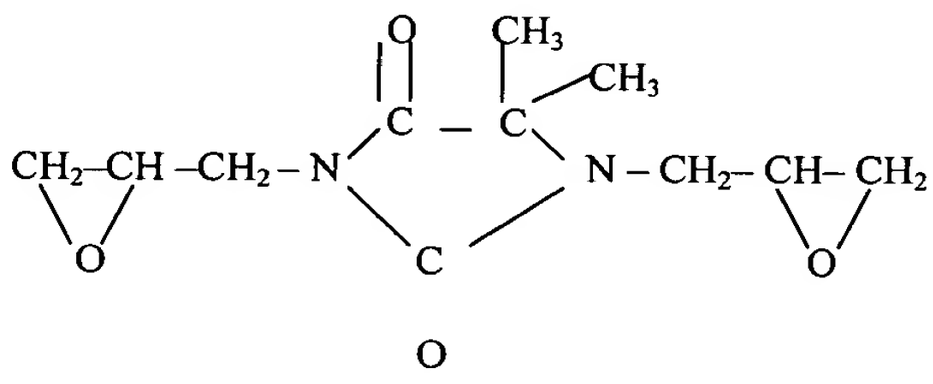
Fig.1c



2,6 – BIS (DIMETHYLAMINOMETHYL)- 4-TERTIARY- BUTYLPHENOL

$HO\text{-}C(CH_3)_3\text{-}C_6H_2[CH_2N(CH_3)_2]_2$

Fig.1d



EPOXYDIMETHYLHYDANTOINE RESIN

Fig.2

TABLE 1

Component	Trade name	Composition number and component concentration in mass parts							
		1	2	3	4	5	6	7	8
Aqueous dispersion of CSPE	CSM450	100	-	100	100	-	-	-	100
	CSM200	-	-	-	-	100	100	-	-
	VDXSE	-	100	-	-	-	-	100	-
Epoxydimet hydantoine resin	HY 238	15	-	-	17	15	10.5	20	-
	EG10	-	11.5	-	-	-	-	-	20
	UP-691	-	-	18.5	-	-	-	-	-
Mannich base	DMP-30*	10	-	-	-	5	10	12.5	10
	DMP-10**	-	-	-	11	-	-	-	-
	2,6-bis (dimethyl amino methyl) cresol	-	-	12.5	-	-	-	-	-
	2,6-bis (dimethyl amino methyl)-tertiary butyl phenol	-	8.5	-	-	-	-	-	-
Filler component	$Mg(OH)_2$ MgO	5	7	8	-	3	-	5	-
	ZnO	5	7	8	10	3	7	5	-
	$BaSO_4$	10	6	-	4	-	-	10	-
	PbO	-	-	3	-	-	-	-	10
Color component	TiO_2	-	-	-	10	-	5	-	-
	Cr_2O_3	3	5	-	-	-	-	4	-
	Fe_2O_3	-	-	5	-	4	-	-	6

*DMP-30 – 2,4,6 –tris(dimethylaminomethil)phenol

** DMP-10 – 2(dimethylaminomethil)phenol

Fig.3

Table 2

Property	ASTM	Dimension	Composition number							
			1	2	3	4	5	6	7	8
Shear strength[1]	D1002	Mpa	20.7	5.8	14.2	15.9	6.0	6.3	8.1	19.5
Tensile strength	D412	Mpa	18.1.	7.1	10.0	13.0	8.1	7.8	8.2	17.3
Ultimate elongation	D412	%	68	190	25	33	302	341	330	27
Chemical resistance [2]	D1654	%	+3.2	+7.3	+4.3	+5.1	+6.4	+5.5	+4.2	+2.1
Relative tensile strength [3]	D412		0.93	0.86	0.85	0.81	0.82	0.93	0.94	0.93
Relative elongation [4]	D412		0.95	0.81	0.81	0.86	0.84	0.89	0.96	0.81
Chemical resistance [5]	D1654	%	+4.1	+8.1	+5.6	+4.8	+6.9	+5.8	+4.6	+3.1

Fig.4

Table 2 (continuation)

Property	ASTM	Dimension	Composition number							
			1	2	3	4	5	6	7	8
Relative tensile strength [6]	D412		0.91	0.81	0.94	0.91	0.89	0.90	0.91	0.94
Relative elongation [7]	D412		0.97	0.73	0.97	0.92	0.86	0.88	0.95	0.84
Chemical resistance [8]	D1654	%	+2.4	+6.8	+1.3	+3.1	+4.8	+5.3	+3.3	+1.9
Relative tensile strength [9]	D412		0.95	0.83	0.97	0.89	0.93	0.98	0.95	0.97
Relative elongation [10]	D412		0.97	0.79	0.94	0.91	0.96	0.93	0.97	0.96
Flexural strength [11]	C78	mm	0.5	2.1	0.1	0.4	2.6	2.9	2.0	0.2

Fig.4

Table. 3

Component	Commercially available product Gaco Flex H-25®	Composition number from Table 1	
		1	6
Chlorosulfonated polyethylene	100	100	100
Epoxy resin	15	15	10.5
Tetron A	2.0	-	-
Mannich base DMP-30	-	10	10
$Mg(OH)_2$	-	5	-
MgO	3.0	-	-
ZnO	-	5	7
PbO	5.0	-	-
$BaSO_4$	-	10	-
TiO_2	20	-	5
Cr_2O_3	-	3	-
Perchloroethylene	209	-	-
Water	-	60	60
Total	**354**	**208**	**192.5**
Solid by Weight	41%	71%	69%
Solid by Volume	25%	48%	46%

Fig.5

Table 4

Property	Standard	Dimension	Gaco Flex H-25®	Composition number from Table 1	
				1	6
Tensile Strength	ASTM D 412	MPa	4.83	20.7	6.3
Ultimate Elongation	ASTM D 412	%	350	68	341
Hardness Cured	ASTM D 2240	Shore A	78-83	80-83	78-80
Water Absorption	ASTM D 471	%	4.0	3.8	4.0
Flash point	ASTM D 56	^0C	10	-	-
Toxicity			+	-	-

Fig.6